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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR    | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|-------------------------|---------------------|------------------|
| 10/562,072      | 12/21/2005  | Michael Andrew Yuratich | MRKS/0142           | 3875             |

7590 12/10/2008  
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| EXAMINER |
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COMLEY, ALEXANDER BRYANT

|          |              |
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| ART UNIT | PAPER NUMBER |
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3746

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12/10/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |  |   |  |
|------------------------------|--|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/562,072   | <b>Applicant(s)</b><br>YURATICH, MICHAEL ANDREW |  |
|                              | <b>Examiner</b><br>ALEXANDER B. COMLEY | <b>Art Unit</b><br>3746                         |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-35 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Election/Restrictions***

1. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

Species A: Figures 1, 4-11, & 24-39b

Species B: Figures 12-19

Species C: Figures 20-21

Species D: Figures 22-23

Species E: Figures 2-3

Species F: Figure 7

Species G: Figure 1A

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims

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are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

2. The claims are deemed to correspond to the species listed above in the following manner:

Species A: Claims 1-3

Species B: Claims 4-17

Species C: Claims 18, 20, & 31-32

Species D: Claims 19, 21-22, & 33-34

Species E: Claims 23-25 & 35

Species F: Claims 26-29

Species G: Claim 30

No claim(s) are generic.

3. The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons:

The separate inventions are:

Claims 1-3: Electric submersible pump having filtering means

Claims 4-17: Drive circuit with a variable voltage source

Claims 18, 20, & 31-32: Drive circuit having means for minimizing the output power of the drive circuit at a fixed speed

Claims 19, 21-22, & 33-34: Drive circuit with means for maximizing the motor speed for a given output power

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Claims 23-25 & 35: Downhole permanent magnet motor having an annular gap such that the fluid flow is turbulent during rotation of the rotor above a critical speed

Claims 26-29: Downhole motor having a bearing with spiral grooving

Claim 30: Drive circuit with variable voltage supply and an inverter for producing modulated waveforms between an upper voltage level and a lower voltage level

These separate inventions are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:

Japanese Patent Document JP 2003-003985 discloses all the features of Claims 1, 2, 4, and 5. In particular, it discloses an electric submersible pump ([0001]) containing an AC permanent magnet synchronous motor ([0006]) having three phases and drive means for supplying drive signals to all the phases of the motor at the same time, each signal being constituted by a cyclically smoothly varying voltage applied to the corresponding motor phase during driving of the motor ([0026]). The drive circuit generates PWM voltages that are applied to the phases of the synchronous motor. In a synchronous motor, it is implicit that the drive signals vary cyclically, and that they are supplied to all three phases at the same time. Furthermore, the motor windings act as a filter to smoothly vary the voltage signals. Moreover, JP 2003-003985 discloses a drive circuit for an electric submersible pump, comprising means for generating cyclically varying waveforms (Fig.4, Ref.63), and output means (power supply cable C, [0026]) for applying said waveforms to energize a plurality of phases of the pump motor. Claim 3 defines the feature that is not known from JP 2003-003985; that feature being filter means. Therefore, the filter means is considered to be the special technical feature (STF) of the first invention. This particular feature solves the problem of removing damaging transients at the motor terminals and reducing torsional vibrations (application p.30, 1.31-p.31, 1.2 and p.32, 1.20-25)

Claims 4-17 differ from JP 2003-003985 in that the drive circuit comprises a variable voltage source. That feature is considered to be the STF of the second invention. It solves the problem of reducing switching losses and avoiding the use of transformers (application p.34, 1.8-9 and p.33, 1.29-31).

Claims 18, 20, & 31-32 differ from JP 2003-003985 in that the drive circuit comprises means for minimizing the output power of the drive circuit at a fixed speed. That feature is considered to be the STF of the third invention. It solves the problem of minimizing the output power of the drive circuit (application p.41 1.6-9).

Claims 19, 21-22, & 33-34 differ from JP 2003-003985 in that the drive circuit comprises means for maximizing the motor speed for a given output power. That

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feature is considered to be the STF of the fourth invention. It solves also the problem of minimizing the output power of the drive circuit (application p.43 1.1-6)

Claims 23-25 & 35 define a downhole permanent magnet motor having an annular gap such that the fluid flow is turbulent during rotation of the rotor above a critical speed. That feature is considered to be the STF of the fifth invention. It solves the problem of heat transfer between the rotor and the stator (application p.13, 1.32-p.14, 1.2).

Claims 26-29 define a downhole motor having a bearing with spiral grooving. That feature is considered to be the STF of the sixth invention. It solves the problem of bearing stability.

Claim 30 defines a variable speed drive circuit having an inverter utilized for producing modulated waveforms that vary between an upper voltage level and a lower voltage level.

The applicant cites the problem of motor power versus motor length as the general problem that must be solved (p.1, 1.20-29). That problem is very common (see JP 2003-003985) and can not be seen as a common inventive concept. The features described above are different and have no technical relationship. Hence, they are also not corresponding since they solve different problems.

### ***Conclusion***

4. Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER B. COMLEY whose telephone number is (571)270-3772. The examiner can normally be reached on M-F 7:30am - 5:00am EST (Alternate Fridays Off). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon C. Kramer can be reached on (571)-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander B Comley/  
Examiner, Art Unit 3746

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
Unit 3746

ABC